Case 16752

Eurorad

Nodular lesion at the flexor tendon of the finger

Published on 19.05.2020

ISSN: 1563-4086
Section: Musculoskeletal system
Area of Interest: Extremities Musculoskeletal system
Imaging Technique: Conventional radiography
Imaging Technique: MR
Imaging Technique: Ultrasound
Case Type: Clinical Cases
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Patient: 58 years, male

Clinical History:

A 58-year-old male presents with a slowly progressive nodule for 6 months on the volar side of the proximal phalanx of the left fifth digit.

Imaging Findings:

A nodule is located on the volar side of the proximal interphalangeal joint of the left digit, contacting the superficial side of the flexor tendon. On a lateral radiograph (Fig. 1), a nonspecific soft tissue swelling is seen, with absent calcifications. A longitudinal sonographic view (Fig. 2) demonstrates a hypoechoic lesion with Doppler signal at the periphery. On T1-weighted images (T1-WI), the lesion is isointense to muscle tissue (Fig. 3). On fat-suppressed T1-WI, the nodule is of heterogeneous signal (Fig. 4). On T2-WI, the lesion is heterogeneous with intralesional areas of intermediate and high signal intensity (Fig. 5). On fat-suppressed T2-WI, a predominant hyperintense signal is seen (Fig. 6). On T2* sequences, there is no significant blooming artefact (Fig. 7). After IV administration of gadolinium contrast, there is vivid, predominantly peripheral contrast enhancement (Fig. 8).

Discussion:

The resection specimen shows a whitish nodule, compatible with a gouty tophus (Fig. 9). Past history included acute gout in both first metatarsophalangeal joints, 8 years previously, for which he was treated by colchicine. His uric acid level was slightly elevated.

A gouty tophus typically represents a chronic granulomatous inflammatory response to a central core of monosodium urate crystals surrounded by a cellular and fibrovascular zone. Typically, they manifest years after an initial, acute gout arthritis, in the context of long-standing hyperuricemia [1]. De novo presentation has been described as well [1].

Macroscopically, soft tissue tophi appear as white nodules. Typical locations are the first metatarsophalangeal joint, olecranon, patella, Achilles tendon, ear and the volar side of the distal phalanges of the fingers [1,2]. Hands and wrist are often affected in advanced cases, most commonly the interphalangeal joints [2].

On conventional radiographs, gouty tophi typically have an intermediate to high density. In patients without renal insufficiency, they may calcify. When present, erosions in the adjacent bone are typically peri-articularly located, well-circumscribed with overhanging edges and parallel to the long axis of the bone. Involvement of the articular surface is a late manifestation [3]. On ultrasound, tophi have a heterogeneously hypoechogenic appearance, with peripheral increased Doppler signal [2]. Ultrasound may also depict the relationship with the adjacent tendon and osseous pressure erosions [2,4]. Gouty tophi have rather nonspecific MRI findings. They are of low to intermediate signal

Tophaceous gout should be included in the differential diagnosis of nodular lesions of the flexor tendon. Correlation of imaging and clinical history is the clue to the diagnosis.

Differential Diagnosis List: Gouty tophus, Giant cell tumour of the tendon , Synovial cell sarcoma , Melanoma , Tendon fibroma

Final Diagnosis: Gouty tophus

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Figure 1

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Description: A lateral radiograph demonstrates a nonspecific soft tissue swelling on the volar side of the proximal phalanx of the left fifth digit (arrow). **Origin:** © Department of Radiology, Algemeen Ziekenhuis Sint-Maarten, Mechelen, Belgium,2019

Figure 2

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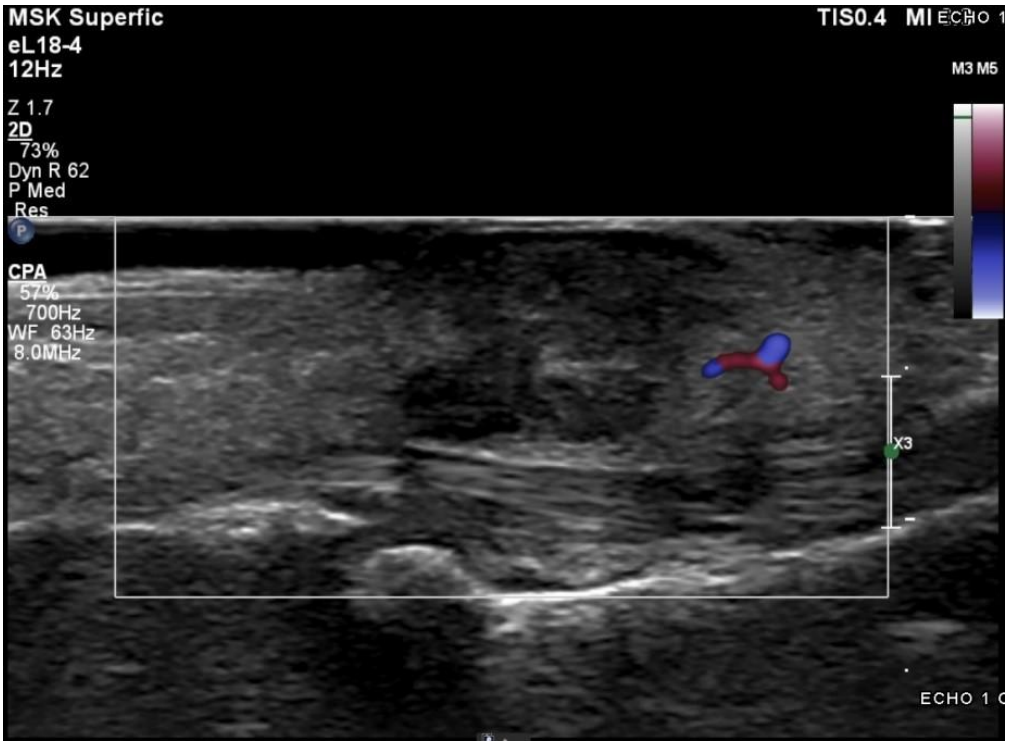

Description: A longitudinal ultrasound view shows a hypoechoic subcutaneous lesion, with contact with the flexor tendon. There is Doppler signal in the periphery of the lesion. **Origin:** © Department of Radiology, Algemeen Ziekenhuis Sint-Maarten, Mechelen, Belgium,2019

Figure 3

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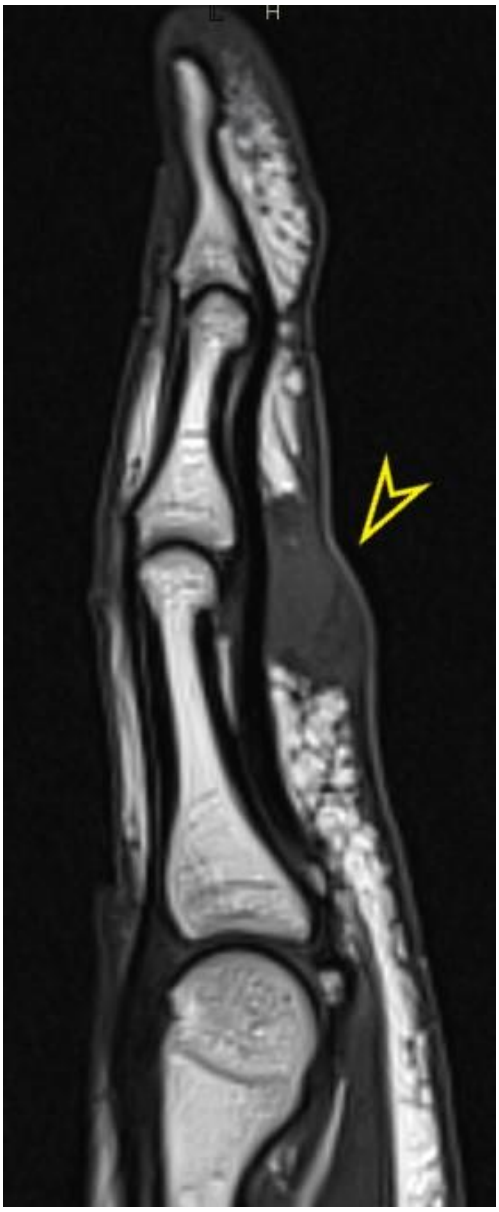

Description: Sagittal T1-WI shows an isointense (to muscle) subcutaneous nodule with intimate contact with the flexor tendon (yellow arrow). **Origin:** © Department of Radiology, Algemeen Ziekenhuis Sint-Maarten, Mechelen, Belgium,2019

Figure 4

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Description: Sagittal fat suppressed (FS) T1-WI demonstrates a heterogeneous signal of the lesion.
Origin: © Department of Radiology, Algemeen Ziekenhuis Sint-Maarten, Mechelen, Belgium,2019

Figure 5

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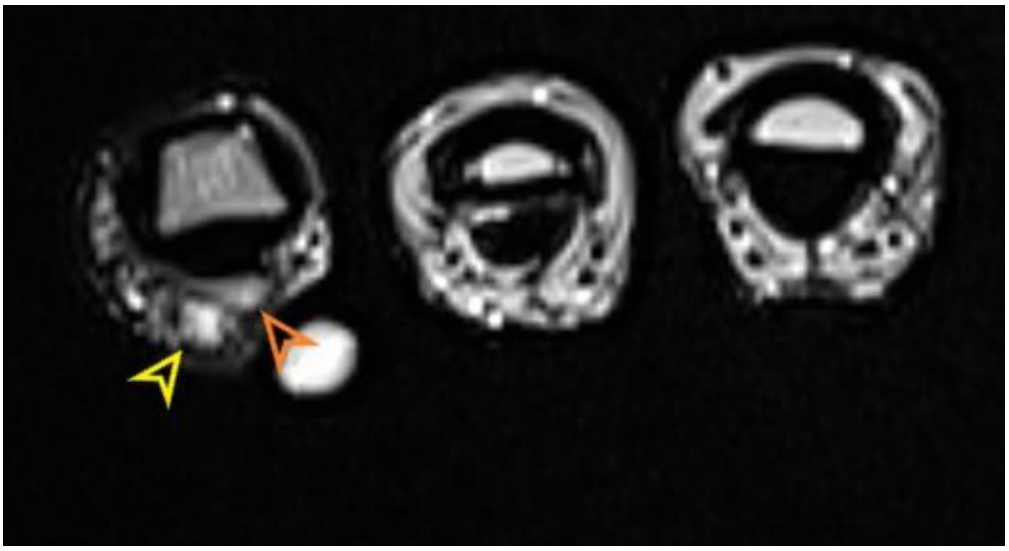

Description: Axial T2-WI shows heterogeneous signal with areas of high (yellow arrow) and intermediate (orange arrow) signal. **Origin:** © Department of Radiology, Algemeen Ziekenhuis Sint-Maarten, Mechelen, Belgium,2019

Figure 6

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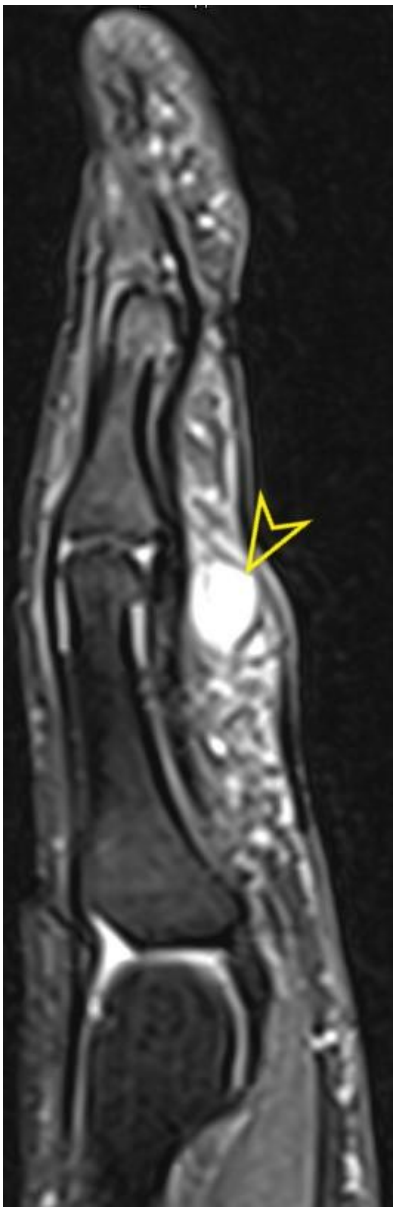

Description: Sagittal fat suppressed T2-WI shows hyperintense signal of the lesion (yellow arrow).
Origin: © Department of Radiology, Algemeen Ziekenhuis Sint-Maarten, Mechelen, Belgium,2019

Figure 7

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Description: Sagittal T2*, showing no significant blooming artefact. **Origin:** © Department of Radiology, Algemeen Ziekenhuis Sint-Maarten, Mechelen, Belgium,2019

Figure 8

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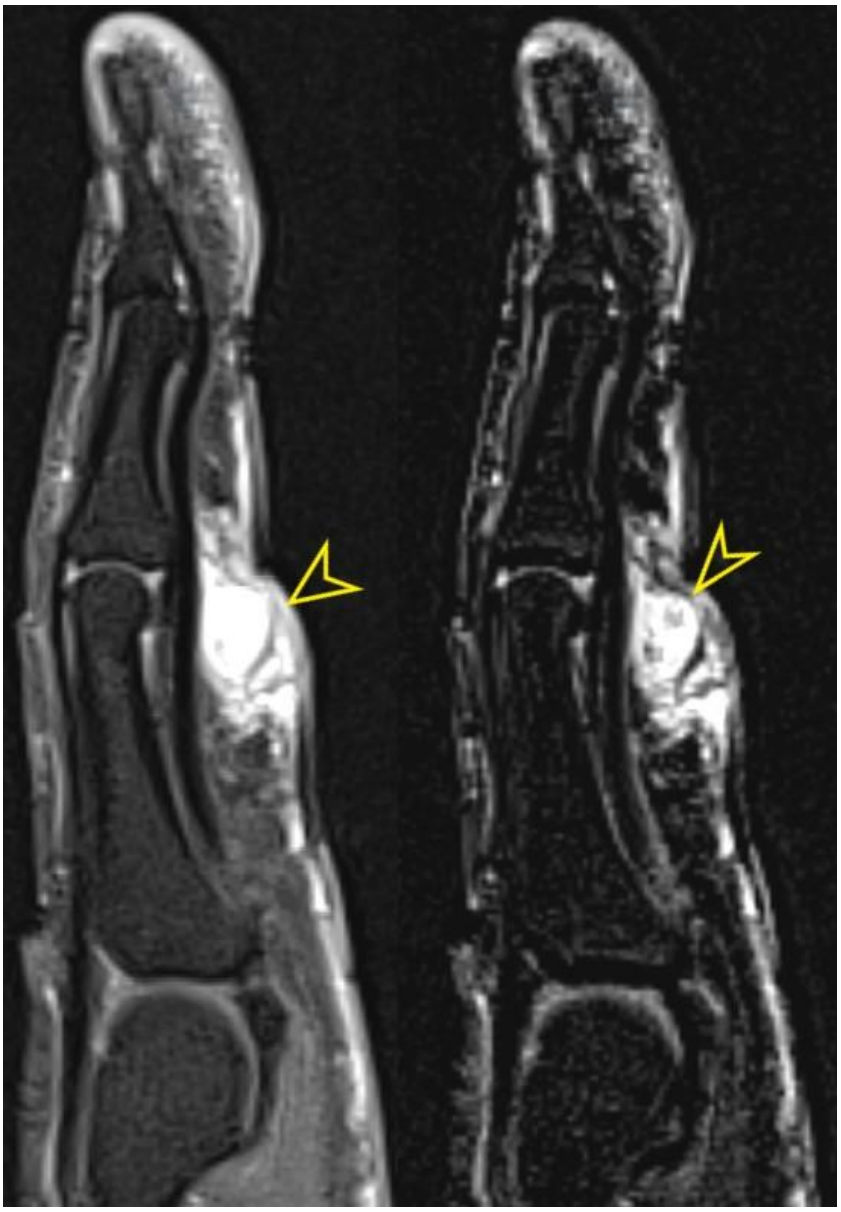

Description: Sagittal contrast-enhanced fat suppressed T1-WI and sagittal subtraction images, demonstrating vivid, inhomogeneous contrast enhancement (yellow arrow). **Origin:** © Department of Radiology, Algemeen Ziekenhuis Sint-Maarten, Mechelen, Belgium,2019

Figure 9

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Description: Macroscopic resection specimen shows a whitish nodule, compatible with a gouty tophus